THE EXAMINATION.

From the marks assigned to candidates in each subject such deduction will be made as the Civil Service Commissioners may consider necessary in order to secure that no credit is allowed for merely superficial knowledge.

In view of the importance of legible handwriting in the public service, deductions which may be of considerable amount will be made from the marks of candidates whose handwriting is not easily legible.

In valuing the work of the candidates the Civil Service Commissioners will give credit for good English in all the 50 subjects of the examination, and not only in subjects 1 and 2 which are specially devoted to the language. Among the qualities of good English may be mentioned orderly, effective and exact expression, combined with due economy of words.

LIST OF SUBJECTS.

Section A.—To be taken by all candidates.

1.	Essay	150
2.	English	150
3.	Present Day	100
4.	Science	100
5.	Vernacular	150
6.	*Viva Voce*	200

Section B.—Candidates are allowed to take up subjects in this section up to a total of 800 marks.

Languages with History and Literature.

7.	Arabic language	200
8.	Arabic history and literature	200
9.	Persian language	200
10.	Persian history and literature	200
11.	Sanskrit language	200
12.	Sanskrit literature and civilization...	200
13.	Pali language	200
14.	Pali literature and civilization	200
15.	English literature, Period 1	100
16.	English literature, Period 2	100
17.	English literature, Period 3	100
18.	English literature, Period 4	100

In subjects 7—14 the literature, etc., associated with a language can only be taken by candidates who also offer the language itself.

History, Economics, Politics, Law and Philosophy.

19.	Indian History, Period 1	100
20.	Indian History, Period 2	100
21.	Indian History, Period 3	100
22.	European History	200
23.	British History	200
24.	General Economics	200
25.	Public Economics	200
26.	Politics	200
27.	Law	200
28.	Moral Philosophy	100
29.	Metaphysical Philosophy	100
30.	Logic	100
31.	Indian Philosophy	100

Mathematics and Science.

32.	Lower Mathematics	200
33.	Higher Mathematics	200
34.	Astronomy	100
35.	Statistics	100
36.	Lower Chemistry	200
37.	Higher Chemistry	200
38.	Lower Physics	200
39.	Higher Physics	200

40. Lower Botany	...	...	...	200
41. Higher Botany	...	...	...	200
42. Lower Geology	...	...	...	200
43. Higher Geology	...	...	...	200
44. Lower Physiology	...	...	...	200
45. Higher Physiology	...	...	...	200
46. Lower Zoology	...	...	...	200
47. Higher Zoology	...	...	...	200
48. Geography	...	...	...	200
49. Psychology	...	...	...	100
50. Experimental Psychology		...	...	100

SYLLABUS.

1. *Essay.*—An essay to be written in English on one of several specified subjects.

2. *English.*—A paper of questions to test the understanding of English and the workmanlike use of words.

3. *Present Day.*—Questions on contemporary subjects, social, economic and constitutional, mainly though not exclusively concerned with India. A liberal choice of questions will be given. Effective and skilful exposition will be rewarded.

4. *Science.*—Questions on general principles, methods and applications of science, including geography. In making the questions the examiners will remember that the candidates are Indian by birth and education. A liberal choice of questions will be given. Simple questions on the use of graphical methods may be included. Attention should be paid to orderly, effective and exact expression.

5. *Vernacular.*—A candidate may offer any one of the following languages :—Assamese, Bengali, Burmese, Gujerati, Hindi, Hindustani, Kanarese, Malayalam, Marathi, Oriya, Punjabi, Pashto, Sindhi, Tamil, Telugu. The test will include translation from the vernacular, set composition in which an English passage is given to be put into the vernacular and free composition in which the candidate writes in the vernacular in his own words on a prescribed subject.

6. *Viva Voce.*—The examination will be in matters of general interest, not in matters of academic interest; it is intended to test the candidate's alertness, intelligence and general outlook.

Languages with History and Literature.—Subjects 7—14. History and Literature will, as far as possible, brought into close relation. The questions on literature will require first-hand knowledge of the authors; and the authors dealt with will be those which candidates ought to have read. Passages of Literature may be set for comment on matters of social, political, legal or other historical importance.

7. *Arabic Language*: translation, free composition and set composition in the classical language.

8. *Arabic History and Literature.*—The main stress in both history and literature will be laid on the period from the middle of the 6th century A.D. to the middle of the 13th century A.D.

9. *Persian Language*: translation, free composition and set composition in the classical language.

10. *Persian History and Literature.*—The main stress in both history and literature will be laid on the period 1000 A.D. to 1500 A.D. Candidates will be expected to have a general knowledge of Persia before 1000 A.D. and from 1500 A.D. to the present time.

11. *Sanskrit Language*: translation, set composition, questions on Vedic and Sanskrit grammar. Both Vedic and classical Sanskrit passages will be set for translation; composition will be required in classical Sanskrit alone. A knowledge of the Prakrit used in plays will be expected.

12. *Sanskrit Literature and Civilization* will include the history of the civilization and thought of India from the Vedic period to 1200 A.D.

13. *Pali Language*: translation, free composition, set composition.

14. *Pali Literature and Civilization* will include the history of Buddhistic civilization in India from 600 B.C. to 1000 A.D.

English Literature.—Subjects 15—18. Candidates for any period should be prepared to show some first-hand knowledge of some of the works of the authors named below for the

period and of their place in the history of their country. Questions may also be asked about other writers. Questions will not be set on the history of the language.

PERIOD 1.	1580-1680.	Spenser, Shakespeare, Bacon, Milton, Hobbes.
PERIOD 2.	1680-1744.	Dryden, Bunyan, Swift, Addison, Defoe, Pope.
PERIOD 3.	1744-1832.	Fielding, Johnson, Goldsmith, Burke, Sheridan, Scott, Wordsworth, Byron, Lamb.
PERIOD 4.	1832-1914.	Macaulay, Tennyson, Dickens, Thackeray, Carlyle, Ruskin, Thomas Hardy, H. G. Wells.

19. *Indian History.*—PERIOD 1. Hindu India from the first Aryan immigration to the end of the 12th century; history and culture together with the history of Budhism outside of India.

20. *Indian History.*—PERIOD 2. Muhammadan India, from the beginning of the 11th century to 1707 (death of Aurangzib); together with the contemporaneous history of the Moslem powers outside of India, the Saracens, the Turks.

21. *Indian History.*—PERIOD 3. India during the British period, from 1600 to the present day; together with the contemporaneous history of the British Empire.

22. *European History.*—The limits of time are 1600 and 1914. Although a fixed date is given for the beginning of the period, candidates will be expected to know in general outline how the initial position was reached. The history of countries closely associated with Europe will be included so far as it influences British history, especially in relation in India.

23. *British History.*—The limits of time are 1400 and 1914. British history will be taken as a whole; politics, economics, and constitution will be considered as mutually affecting each other, and all together as the outcome of the common life of the nation. Candidates will be expected to know so much of European history as will make the external action of this country fully intelligible and will explain those movements in Britain which had their beginnings elsewhere, *e.g.*, the Renaissance, the Reformation, and the reactions in this country of the French Revolution. From 1750 onwards the outstanding incidents and movements in the history of British possessions will assume more importance.

24. *General Economics.*—General Economics including industrial history with special reference to India. The subject will be treated as a whole, and candidates should be prepared to illustrate the theory by the facts and to analyse the facts by the help of the theory. The history of economic thought will be included.

25. *Public Economics.*—The questions will deal with the main forms of State action, central and local, in the economic sphere, together with public finance.

26. *Politics.*—This subject will include political theory and political organisation.

Candidates will be expected to show a knowledge of political theory and its history, political theory being understood to mean not only the theory of legislation, but also the general history of the State in connection with kindred studies such as Jurisprudence, Public International Law and Economics. Questions involving illustrations from Indian history may be set.

Political organisation will include Constitutional Forms (Representative Government, Federalism, etc.) and Public Administration, central and local. The history of institutions is not included, but candidates will be expected to know the earlier stages from which existing institutions have directly developed, and in this section also illustrations from Indian history may be expected.

27. *Law.*—Constitutional law, jurisprudence, equity, contracts, torts, easements, law of property with special reference to Transfer of Property Act. Hindu and Muhammadan Law as administered in British India. Indian Evidence Act, Civil Procedure Code, Indian Penal Code, Criminal Procedure Code.

Mathematics.—Subjects 32-33.—The examination will be designed to test understanding of the subject and ability to apply it rather than ability to reproduce proofs of propositions. No great skill in manipulation will be expected.

Questions involving the use of mathematical instruments may be set at both stages.

32. *Lower Mathematics.*—Logarithms; numerical equations; graphs; approximation; infinite series; complex numbers; solution of triangles.

Geometry in two and three dimensions according to the method of Euclid. Analytical geometry in two dimensions (method of Descartes). The construction of plans, elevations and sections of solid bodies (method of Monge).

Differential co-efficients; maxima and minima; integrals; the application of the infinitesimal calculus to curves.

Projectiles; harmonic motion; momentum; energy; power. Equilibrium of rigid bodies in two dimensions; link polygons; virtual work. Simple machines, *e.g.*, tackle, cranes, engine governors, brakes. Fluid pressure; expansion of a perfect gas; air pump.

33. *Higher Mathematics.*—Lower Mathematics together with:—

Uniform convergence; infinite products; exponential and trigonometric functions of a complex variable.

The elements of the geometry of surfaces.

Taylor's series; partial differentiation; areas and volumes of solids by integration; moments of inertia; the solution of differential equations occurring in elementary mechanics.

Centrodes; simple cases of linked mechanisms. Equilibrium of forces in three dimensions; loading of beams; elementary treatment of potential. The motion of rigid bodies in two dimensions. Stability of flotation.

34. *Astronomy.*—Celestial co-ordinates. Astronomical instruments descriptively treated; method of using them and of determining their principal errors. Orbit of the earth. The Ecliptic. Time. Latitude and Longitude. Motion of the moon, simpler calculations, eclipses. Parallax. Refraction. Aberration. Precession and nutation.

Stellar maps and catalogues; the nautical almanac; the principal constellations. Descriptive discussion of planets, comets, double stars, nebulas. The simpler processes of computation; reduction of observations and of measurements made on photographic plates.

35. *Statistics.*—The questions to be set will cover:—

(1) Elementary theory of statistics, not depending mainly on the theory of probability nor requiring a knowledge of the calculus—frequency distributions, averages, percentiles, and simple methods of measuring dispersion; graphic methods; elementary treatment of qualitative data, *e.g.*, investigation of association by comparison of ratios, consistency of data; the practice of the simplest graphic and algebraic methods of interpolation.

(2) Practical methods used in the analysis and interpretation of statistics of prices, wages and incomes, trade transport, production and consumption, education, etc., the more elementary methods of dealing with population and vital statistics; miscellaneous methods used in handing statistics of experiments or observations.

(3) Elements of modern mathematical theory of statistics; frequency curves and the mathematical representation of groups generally; accuracy of sampling as affecting averages, percentages, the standard deviation; significance of observed differences between averages of groups, etc.; the theory of correlation for two variables.

A considerable choice of questions will be given, especially as to paragraph 2, and it will be possible for a candidate without advanced mathematical knowledge to obtain full marks by answering questions under paragraphs 1 and 2.

Natural Sciences.—Subjects 36—47. The standard of the higher division of a science will be that which is required in the main subject for an honours degree at the universities. The standard for the lower division of a science will be that required in a subject subsidiary to the main subject, whether required at the final degree examination or at a preceding examination.

40, 41, *Lower and Higher Botany.*—Vegetable Physiology will be included in each division.

42, 43. *Lower and Higher Geology.*—Mineralogy will be included in each division.

48. *Geography*, not excluding topics which concern geography jointly with other subjects such as economics, history, physics, botany, and geology. There will be a practical test which will necessitate a knowledge of cartographical methods and notations, and for this test drawing instruments may be required.

HOME DEPARTMENT,
DELHI,
Dated the 5th November 1921.